NOT MEASUREMENT-
SENSITIVE

KSC-DF-107
REVISION D

TECHNICAL DOCUMENTATION STYLE GUIDE

This document ~~does~~/does not contain export-controlled technical data in Category/ECCN: N/A.
Classified by C Wayne Ranson on 4/8/2005.

APRIL 6, 2005

SPACEPORT ENGINEERING AND TECHNOLOGY DIRECTORATE

National Aeronautics and
Space Administration

John F. Kennedy Space Center

KSC FORM 16-12 (REV. 6/95) PREVIOUS EDITIONS ARE OBSOLETE (CG 11/95)

KDP-F-5411 REV. DRAFT 2

KSC-DF-107 REV D.DOC/DD

KSC-DF-107
REVISION D

TECHNICAL DOCUMENTATION STYLE GUIDE

This Revision Supersedes All Previous Editions of This Document

APRIL 6, 2005

JOHN F. KENNEDY SPACE CENTER, NASA

RECORD OF REVISIONS			
REV LTR	**CHANGE NO.**	**DESCRIPTION**	**DATE**
		Basic Issue	February 1979
	1	Added Section V, Space Station Project Documentation Format and Preparation Guidelines	July 1987
A		General revision incorporating Change 1	March 1988
B		General revision incorporating supplement 1 and the metric system of measurement	August 1995
C		Revised all sheets to incorporate simplified document formats and align them with automatic word processing software features	November 15, 2004
D		Revised to incorporate an export control sign-off on the covers of documents and to remove the revision level designation for NPR 7120.5-compliant project plans	April 6, 2005

FOREWORD

This style guide establishes the standard format for certain official technical documentation prepared for or by the Spaceport Engineering and Technology (SE&T) Directorate for release at Kennedy Space Center (KSC). This document primarily defines the requirements for preparing general technical publications required by SE&T that are not covered by other specific guidelines, such as GP-435.

This document is further intended to guide authors in determining content elements of technical publications. Not all documents will require all elements addressed here. This guide recommends content elements, writing styles, and formatting conventions and refers often to a family of supporting templates that can help the author produce the intended results. While this guide is concerned primarily with the elements a document should include and how those elements should be arranged, it assumes a certain level of familiarity with word processing functions and does not offer step-by-step instructions.

The purpose of any organization's style guide is to establish goals and standards of documentation that promote efficiency, accuracy, consistency, thoroughness, and understanding. The intent is not that authors will sacrifice content to format. Documentation should reflect and serve the work, not surpass it in importance or time spent.

It is envisioned that authors will use this guide and the accompanying templates to the extent that they are practical and reasonable in composing and organizing technical documentation, before using the editing and formatting resources available to them. This guide and its accompanying templates then provide authors a standard of editing and formatting they may expect in their final documentation.

This page intentionally left blank.

CONTENTS

1. PURPOSE AND SCOPE 1

2. APPLICABLE DOCUMENTS 1

3. TEMPLATES 2

4. WRITING CONVENTIONS 4
4.1 Usage and Style References 4
4.2 Voice and Mood 4
4.3 Use of *Shall, Should,* and *Will* 4
4.4 Abbreviations, Acronyms, and Symbols 4
4.5 Nomenclature Consistency and Accuracy 5
4.6 Items in a Series 5
4.7 Prefixes and Suffixes 6
4.8 Division of Material 6
4.9 Gender and Number 6
4.10 Capitalization 6
4.11 Proprietary Names 7
4.12 E-Mail and Web Site Addresses 7

5. GENERAL FORMATTING 8
5.1 Body of Document 8
5.2 Section and Subsection Headings 8
5.3 Page Numbering 9
5.4 Page Assignments 9
5.4.1 Documents Printed Face-Only 9
5.4.2 Documents Printed Head to Head 9
5.5 Tabloid Pages 10
5.5.1 Tabloid Pages in Documents Formatted Face-Only 10
5.5.2 Tabloid Pages in Documents Formatted Head to Head 10
5.6 References to Material in the Current Document and Other Sources 11

6. DOCUMENT ELEMENTS 12
6.1 Multivolume Manuals or Documents 12
6.2 Front Matter 12
6.2.1 Cover Page 12
6.2.2 Title/Signature Page 14
6.2.3 Record of Revisions 15
6.2.4 Opening Elements 16
6.2.4.1 Foreword 16
6.2.4.2 Acknowledgements 16
6.2.4.3 Executive Summary 17

6.2.5 Table of Contents 18
6.2.6 Lists of Figures and Tables 18
6.2.7 List of Abbreviations, Acronyms, and Symbols 19
6.3 Headers and Footers 19
6.4 Body of Document 20
6.5 List of Documents 20
6.6 Tables 21
6.7 Figures 22
6.8 Bulleted Lists 23
6.9 Ordered Lists 23
6.10 Notes, Cautions, and Warnings 24
6.11 Mathematical Expressions or Equations 25
6.12 Measurements 26
6.13 Measurement Designations 26
6.13.1 Metric 26
6.13.2 Metric/Inch-Pound 27
6.13.3 Not-Measurement-Sensitive Designation 27
6.14 Appendices 27

7. DOCUMENT RELEASE AND DISTRIBUTION PROCEDURES 28
7.1 Initial Release 28
7.1.1 Initial Release Through EDC 28
7.1.2 Initial Release Through TechDoc 28
7.2 Revisions 28
7.2.1 Release of Revisions Through EDC 29
7.2.2 Release of Revisions Through TechDoc 30
7.3 Cancellations 30
7.3.1 Cancellations Released Through EDC 30
7.3.2 Cancellations Released Through TechDoc 31

8. KSC SPECIFICATIONS 32
8.1 Front Matter 33
8.1.1 Cover Page 33
8.1.2 Title/Signature Page 33
8.1.3 Opening Elements 34
8.2 Headers and Footers 34
8.3 Section and Subsection Headings 34
8.4 Applicable Documents Section 34
8.5 Document Release and Distribution Procedures 36
8.6 Standardization Document Improvement Proposal 36

9. KSC STANDARD 36
9.1 Front Matter 36
9.1.1 Cover Page 36

9.1.2 Title/Signature Page....37
9.1.3 Opening Elements....37
9.2 Headers and Footers....37
9.3 Section and Subsection Headings....38
9.4 Applicable Documents Section....38
9.5 Document Release and Distribution Procedures....39
9.6 Standardization Document Improvement Proposal....39

10. KSC SPECIFICATION DRAWING....40
10.1 General Formatting....40
10.1.1 Section and Subsection Headings....40
10.1.2 Page Numbering....40
10.1.3 Page Assignments and Blank Left-Hand Pages....41
10.1.4 Tabloid Pages....41
10.2 Document Elements....41
10.2.1 Multivolume Manuals or Documents....41
10.2.2 Cover Sheet....41
10.2.3 Continuation Sheets....42
10.2.4 Opening Elements....42
10.2.5 Headers and Footers....42
10.3 Drawing Release and Distribution Procedures....43
10.3.1 Initial Release....43
10.3.2 Revisions....43
10.3.3 Cancellation....43

11. NPR 7120.5-COMPLIANT PROJECT PLAN....43
11.1 Section and Subsection Headings....43
11.2 Opening Elements....43

12. CONFIGURATION MANAGEMENT PLAN....43
12.1 Section and Subsection Headings....43
12.2 Opening Elements....43

13. SOFTWARE VERSION DESCRIPTION DOCUMENT (SVDD)....44
13.1 General Formatting....44
13.1.1 Section and Subsection Headings....44
13.1.2 Page Numbering....44
13.1.3 Page Assignments and Blank Left-Hand Pages....44
13.1.4 Tabloid Pages....44
13.2 Document Elements....45
13.2.1 Multivolume Manuals or Documents....45
13.2.2 Cover Sheet....45
13.2.3 Continuation Sheets....46
13.2.4 Opening Elements....46

13.2.5 Headers and Footers....46
13.3 Drawing Release and Distribution Procedures....46
13.3.1 Initial Release....46
13.3.2 Revisions....46
13.3.3 Cancellation....46

APPENDIX A. GLOSSARY....47

FIGURES

Figure 1. Measurement Designations....13
Figure 2. Export Control Sign-Off....13
Figure 3. ITAR Notice....14
Figure 4. EAR Notice....14
Figure 5. Metric Designation....27
Figure 6. Metric/Inch-Pound Designation....27
Figure 7. Not-Measurement-Sensitive Designation....27
Figure 8. Sample Cancellation of Document Released Through EDC....31
Figure 9. Sample Cancellation of Document Released Through TechDoc....32

TABLES

Table 1. Available Templates....3
Table 2. Page Layout Settings (Inches)....15

ABBREVIATIONS, ACRONYMS, AND SYMBOLS

@	at
®	registered trademark
°C	degree Celsius
µ	micro
BIS	Bureau of Industry and Security
CAPPS	Checkout and Payload Processing Services
DRA	Document Release Authorization
e.g.	for example
EAR	Export Administration Regulations
EDC	Engineering Documentation Center
GP	general publication
GPO	Government Printing Office
i.e.	that is, namely
ISBN	International Standard Book Number
ISS	International Space Station
ITAR	International Trade in Arms Regulations
JBOSC	Joint Base Operations Support Contract
KDP	Kennedy Documented Procedure
KSC	John F. Kennedy Space Center
MS	Microsoft
NASA	National Aeronautics and Space Administration
NPR	NASA Procedural Requirement
osb	original signed by
pt	point
SE	support equipment
SE&T	Spaceport Engineering and Technology
SFOC	Space Flight Operations Contract
SI	International System of Units

STI	Scientific and Technical Information
SVDD	Software Version Description Document
™	trademark
USML	U.S. Munitions List
USTDC	University-Affiliated Spaceport Technology Development Contract
V	volt

TECHNICAL DOCUMENTATION STYLE GUIDE

1. PURPOSE AND SCOPE

This style guide establishes the standard format for certain official technical documentation prepared for or by the Spaceport Engineering and Technology (SE&T) Directorate for release at Kennedy Space Center (KSC). This document primarily defines the requirements for preparing general technical publications required by SE&T that are not covered by other specific guidelines, such as GP-435.

This document is further intended to guide authors in determining content elements of technical publications. Not all documents will require all elements addressed here. This guide recommends content elements, writing styles, and formatting conventions and refers often to a family of supporting templates (see Section 3) that can help the author produce the intended results. While this guide is concerned primarily with the elements a document should include and how those elements should be arranged, it assumes a certain level of familiarity with word processing functions and does not offer step-by-step instructions.

The recommendations in this guideline are suitable for formatting various document types: specifications, standards, technical manuals and reports, general publications, studies, implementation plans, requirements, and test reports. Documents with specific content requirements (boilerplates) are addressed in separate sections.

This document applies to technical documentation accomplished by KSC contractor personnel (e.g., Space Flight Operations Contract [SFOC], Joint Base Operations Support Contract [JBOSC], Checkout and Payload Processing Services [CAPPS], and University-Affiliated Spaceport Technology and Development Contract [USTDC]) to the extent specified in their contracts.

A glossary is provided in Appendix A.

2. APPLICABLE DOCUMENTS

The following documents form a part of this document to the extent specified herein.

GP-435	Engineering Drawing Practices, Vol. I of II, Aerospace and Ground Support Equipment
ISBN 0-02-804047-3	The Gregg Reference Manual
ISBN 0-16-050082-6	United States Government Printing Office Style Manual
ISBN 0-87779-710-2	Merriam-Webster's Collegiate Dictionary, Tenth Edition

KDP-F-5031	Project Plan Template
KDP-F-5401	Configuration Management Plan Template
KDP-F-5405	Basic Doc Template
KDP-F-5406	KSC Specification Template
KDP-F-5407	KSC Standard Template
KDP-F-5408	KSC Specification Drawing Template
KDP-F-5410	SVDD Template
KDP-F-5411	Formal Doc Template
KDP-KSC-P-1537	Document Release Authorization (DRA) Process
KDP-KSC-P-1212	KSC Scientific & Technical Information (STI) Review Process
KDP-KSC-P-2613	KSC Export Process (Export Control)
KDP-P-2930	Spaceport Engineering and Technology (SE&T) Directorate Project Documentation Management
KSC-DM-3673	SI (Metric) Handbook
KSC-STD-P-0001	Preparation of Equipment or System Procurement/ Performance Specifications, Standard for
KSC-YA-6197	Document Template User Guide
NPR 7120.5	NASA Program and Project Management Processes and Requirements

3. TEMPLATES

A family of templates has been developed to include the content elements set forth in this document and to format those elements in the manner described here. In the present context, a template is a Microsoft (MS) Word file (file extension .dot) composed of styles that control formatting attributes and automatic features that impart consistency and increased functionality, such as AutoText, captions, and hyperlinked cross-references. To the extent that is beneficial, these templates also include the necessary document elements, such as cover and title pages, tables of contents, lists of figures and tables, and titles of sections and subsections. Basic Doc Template (for documents formatted face-only) and Formal Doc Template (for documents formatted head to head) are the foundation for all the templates and are suitable for developing a variety of document types. This revision of KSC-DF-107 was composed and formatted using Formal Doc Template. Hereafter, *template(s)* refers to the applicable template or templates in this family. Table 1 lists the available templates and their applications.

KSC-YA-6197 provides detailed instructions on accessing and using the available templates and should be considered an essential companion text to this guideline.

Table 1. Available Templates

Template	Application
Basic Document (formatted face-only) KDP-F-5405	Any numbered KSC document or manual that requires KSC Form 16-12 for its cover and does not have specific content requirements addressed by a dedicated template.
Formal Document (formatted head to head) KDP-F-5411	Any numbered KSC document or manual that requires KSC Form 16-12 for its cover and does not have specific content requirements addressed by a dedicated template.
KSC Specification[a] (formatted head to head) KDP-F-5406	Any new or revised KSC specification that has traditionally been issued with KSC Form 16-12 as the cover.
KSC Standard[a] (formatted head to head) KDP-F-5407	Any new or revised KSC standard that has traditionally been issued with KSC Form 16-12 as the cover.
KSC Specification Drawing[a] (formatted face-only) KDP-F-5408	Any new or revised KSC specification drawing that has traditionally been issued with KSC Form 21-2C as the cover and KSC Form 21-2D as the continuation sheets.
NPR 7120.5-Compliant Project Plan (formatted head to head) KDP-F-5409	Any new or revised project plan.
Software Version Description Document (formatted face-only) KDP-F-5410	Any new or revised software version description document (SVDD) to be issued with KSC Form 21-2C as the cover and KSC Form 21-2D as the continuation sheets.
Project Plan (formatted face-only) KDP-F-5031	Any new or revised project plan.
Configuration Management Plan (formatted face-only) KDP-F-5401	Any new or revised project configuration management plan.

[a] Exercise care in determining whether to issue a revision to an existing KSC specification or KSC standard in the applicable template. If the KSC specification or KSC standard does not/will not include the content elements required in the template, Formal Doc Template may be used instead.

4. WRITING CONVENTIONS

This section highlights some writing conventions as they apply to technical material but, more important, lists several references that provide more comprehensive guidance.

4.1 Usage and Style References

While the computer's spell- and grammar-checking functions are helpful signals, they are not definitive authorities on spelling or grammar. Consider the suggestions they provide, but consult a reliable reference source whenever the correction is not immediately obvious.

Use the *United States Government Printing Office (GPO) Style Manual* as the primary guide for capitalization, punctuation, abbreviations, compound word forms, numerals in text, equations, grammar, and spelling. *The Gregg Reference Manual* and other well-known style and usage guides may be used as secondary sources. Use a widely recognized dictionary such as *Merriam-Webster's Collegiate Dictionary* for definitions and spelling.

4.2 Voice and Mood

Active voice is preferred over passive voice (active: "The engineer completes the requisition;" passive: "The requisition is completed by the engineer.") except in those cases that emphasize the action being performed over who performs the action. Express thoughts as directly as possible, but do not struggle to identify a performer of each action simply for the sake of active voice. Use the imperative mood to give instructions ("Remove test set from carrying case.") and the indicative mood to describe or discuss ("When switch A is in the ON position, lamp 34 lights.").

4.3 Use of *Shall, Should,* and *Will*

Use *shall* to express a requirement. Ensure that such statements are specific and not open to interpretation. Use *should* to express a recommendation. Use *will* to forecast an event or condition.

4.4 Abbreviations, Acronyms, and Symbols

Abbreviations are shortened forms of words or phrases. They are usually formed by taking the initial letters of words or phrases (e.g., KSC for Kennedy Space Center or V for volt) or by shortening words as in some units of measure (e.g., ft for foot). Abbreviations are usually pronounced by saying the individual letters or by saying the word or words that the abbreviation represents.

Acronyms are abbreviations that are pronounced as words (e.g., NASA, laser, radar).

Symbols (e.g., °C for degree Celsius or µ for micro) are pronounced by saying the words that the symbols represent.

Use the customary pronunciation of the abbreviation, acronym, or symbol (hereafter referred to collectively as abbreviation) to determine which article to use with it—*a* or *an.* For example, write "a RAC" (pronounced rak) but write "an RFP" (pronounced by saying each letter).

Call out abbreviations in parentheses after the words they represent the first time they occur in text. The abbreviation may be used thereafter. If the term appears only once, there is no need to show the abbreviation, unless the audience is likely to recognize it more readily than the term itself. It is also acceptable to repeat the term and abbreviation many pages after its last appearance, especially for less familiar abbreviations. Abbreviations called out in the foreword or executive summary should be called out again at their first appearance in the body of the document. There is no need to call out Kennedy Space Center or National Aeronautics and Space Administration anywhere in the text of documents intended primarily for KSC distribution, but list both abbreviations in the list of abbreviations, acronyms, and symbols. There is also no need to call out United States for U.S. As a rule, the characters of abbreviations are typed solid without spaces and usually without periods, but because exceptions exist, follow the guidance of the authority that established or presides over the particular entity. If an abbreviation is called out in text already enclosed in parentheses, place the abbreviation in square brackets (e.g., degree Celsius [°C]). It is better not to abbreviate *inch* or *inches* in sentences to avoid confusion with the word *in.*

In general, form the plural of an abbreviation by adding a lowercase *s.* Form the possessive of an abbreviation by adding an apostrophe and *s* ('s).

4.5 Nomenclature Consistency and Accuracy

Use nomenclature consistently within a publication and parts list. Make part names and modifying words agree with those of the approved applicable engineering drawings. Make references to nomenclature on panels and equipment identical to what appears on the panel or equipment (e.g., "Turn switch to ON."). Also see 5.1.

4.6 Items in a Series

Separate three or more items in a series with commas (or semicolons if either of the first two items already has internal commas or if more distinction is needed to separate the items and avoid confusion). While not always necessary in informal writing, the practice is essential in technical writing to avoid ambiguity.

Clearer:	The color designations are red, white, and blue. (Three designations.)
Less clear:	The color designations are red, white and blue. (Three designations or two—one using red and one using both white and blue?)

4.7 Prefixes and Suffixes

Words with prefixes (such as re, pre, post, de, multi, non, semi, sub, un, over, and auto) and suffixes (such as less, like, proof, and wide) are written solid without hyphens or spaces unless the resulting words are difficult to pronounce, could be mistaken for other words, or cause a letter to appear three times in a row (instead of "shelllike", write "shell-like"). The spell-checking functions of word processing programs tend to mark many solid words with prefixes and suffixes as errors. Do not rely on spell-checking as a dictionary.

Hyphenate prefixes added to proper nouns (e.g., non-American) and those added to phrases that are already hyphenated when the prefix modifies the already-hyphenated phrase (e.g., non-load-bearing wall).

4.8 Division of Material

Whether organizing subsection headings or ordered or bulleted lists, avoid dividing an item into only one subordinate item. For example, avoid 4.1 without 4.2 and avoid a. without b. Rephrase the preceding material to include what would have stood alone at a lower level.

4.9 Gender and Number

Try to phrase sentences to avoid references to gender. The easiest way is to use a plural noun as the subject. Consider the following examples:

- The employee shall inform his or her supervisor. (Correct, but this singular subject [*employee*] requires two singular, gender-specific possessive pronouns [*his* and *her*].)
- Employees shall inform their supervisors. (Correct. The plural possessive pronoun [*their*] agrees with the plural subject [*employees*] and avoids the need to specify gender.)
- Each employee shall inform their supervisor. (Incorrect. The plural possessive pronoun [*their*] disagrees with the singular subject [*employee*].)

4.10 Capitalization

Capitalize the following words wherever they occur: Government, Federal, Shuttle, Space Shuttle, Orbiter, and Center when it refers to a NASA Center. Capitalize the names of individuals, organizations, trade names (see 4.11), and other proper nouns that represent specific systems, subsystems, or structures (e.g., Launch Complex 39-A, External Tank). In running text, capitalize the titles of jobs or positions only when they immediately precede a person's name (e.g., "Chief Jones," but "John Jones, chief of…"). In running text, avoid overcapitalizing common nouns such as ground support equipment.

In the titles of sections, subsections, figures, and tables, if one part of a hyphenated word is capitalized, all parts are capitalized. In titles, always capitalize the following categories of words:

a. Nouns

b. Verbs, including the word *To* when used to form the infinitive (e.g., "To Go," "To Be")

c. Pronouns

d. Adjectives

e. Adverbs

f. Any words with four or more letters

g. First and last words

Also see 4.11 and 4.12.

4.11 Proprietary Names

Trade names, copyrighted names, or other brand names applying to the product of one manufacturer should not be used except to report findings related to those specific products or to require those products. Use the name of the generic commodity instead. When a proprietary product is specifically required or is a principal in the work reported, capitalize the trade name. There is no need to show the trademark (™) or registered symbol (®) after the trade name.

4.12 E-Mail and Web Site Addresses

Ensure that e-mail and Web site addresses are accurate and functional. E-mail addresses are not case-sensitive and may be written in lowercase. However, since many e-mail addresses (particularly those used throughout NASA) reflect individuals' names, following the normal capitalization of names is also acceptable. If more than one e-mail address appears in the document, use a consistent style, especially for those reflecting names. Reproduce the capitalization of Web site addresses exactly.

To prevent any confusion of e-mail and Web site addresses with surrounding punctuation, enclose these elements in angle brackets, as in the following examples.

- "Direct inquiries to < John.Doe@nasa.gov >."
- "Visit us at < http://OurHomePage.com >."
- "Photos can be viewed at < www.spacephotos.org >."

Placing a single space between the e-mail address or Web site address and the opening and closing angle brackets preserves the functionality of the hyperlinks for electronic documents.

Always try to fit an e-mail address on a single line. If it is necessary to break an e-mail address at the end of a line, break before the *at* symbol (@) or before a dot. Never insert a hyphen into an e-mail address to indicate a line break.

Likewise, make every effort to keep a Web site address on a single line. If a Web site address must be broken across two lines, break after the double slash but before a single slash, dot, underscore, hyphen, or any other punctuation mark. Never insert a hyphen into a Web site address to indicate a line break.

5. GENERAL FORMATTING

The document elements and formatting recommendations in this section can be produced using the templates. Templates are available to accommodate face-only printing and head-to-head printing (printing on both sides of the sheet), employing the concept of right- and left-hand (odd- and even-numbered) pages. Times New Roman and Arial are the only recommended fonts because of their wide availability for documents transmitted electronically. Arial is used for the cover page, title page, separate signature page (if used), and figure callouts. Times New Roman is used for all other text in the document.

5.1 Body of Document

Unless otherwise noted, 12-point (pt) Times New Roman type is used. Avoid the use of quotation marks, italics, and underlining to emphasize words in running text, especially when the meaning (often metaphorical) is clear. It is appropriate to italicize the titles of books and words used as words in running text, conventions that are used throughout this document. It may be effective to use italics or quotation marks for the names on panels, controls, and computer program features, such as dialog boxes, menus and menu selections, buttons, toolbars, and keys, to differentiate them from the surrounding text, especially when such names are phrases (also see 4.5). Unless specifically instructed (as in 6.11), use roman (upright) text. Align text to the left with a ragged right-hand margin for easier reading. Do not use full justification. Automatic hyphenation at the ends of lines is preferred. However, a word should not be split across two pages nor should the final word in a paragraph be split across two lines. As a final preparation step before document release, insert manual line breaks to prevent such word divisions. Remember to look for such controls the next time the electronic file is modified. Use block-style paragraphs without indentation. Double-space between paragraphs. Do not allow a single line of a paragraph to appear alone at the top or bottom of a page. Ensure that widow/orphan control is engaged for all paragraphs. In the templates, use Body Text style for the regular paragraphs.

5.2 Section and Subsection Headings

Each section and subsection may contain multiple unnumbered paragraphs, but each numbered section or subsection should have a title. All headings (i.e., the numbers and titles of sections and subsections) should be shown in 12-pt, bold, Times New Roman type. The first level uses all capital letters. Subsequent levels use normal title capitalization (see 4.10). Headings are outline-numbered (as in this document) using Arabic numerals. The first level is followed by a decimal point. Subsequent levels do not have a closing decimal point. Avoid subdividing a level into only one item at the subsequent level (see 4.8) and assigning identical or nondescriptive titles to headings. Try to organize material to minimize the number of heading levels in a document. It is difficult for readers to recall the organization past four or five heading levels. When heading levels are assigned manually (simply by typing numbers with no independent functionality), the number of possible levels is unlimited. In the templates, nine levels are available, using Heading styles 1 through 9.

Do not force headings to the tops of new pages simply as a matter of course. Double-space between the heading and the first paragraph, and ensure that the heading and its following paragraph begin on the same page. If a heading is followed by a subheading, ensure that the two headings and their following paragraph all begin on the same page (also see 5.3). In the templates, the Heading styles and Body Text style control this formatting automatically.

5.3 Page Numbering

Use lowercase Roman page numbering for the front matter of a document. Arabic numerals are used for the body of the document, starting with 1 and continuing through the appendices, if any. There is no need to include section numbers or to restart the page numbers at each section. All page numbers are shown in the footer, either centered (for documents formatted face-only) or at the outer margin of the page (for documents formatted head to head). See Table 1 for the overall formatting of document types by template. Also see 6.2.1 and 6.2.2.

5.4 Page Assignments

5.4.1 Documents Printed Face-Only

Shorter documents and those whose primary medium will be electronic may be formatted with face-only pages. Such pages are not defined left-hand or right-hand pages. Headers appear on the right, and page numbers are centered. Basic Doc Template (KDP-F-5405) is set up in this format, as are the plan templates and those that use spec drawing paper.

5.4.2 Documents Printed Head to Head

Documents (especially long ones) that will be used primarily in hard-copy format are printed head to head, using both sides of the sheet. Formal Doc Template (KDP-F-5411) has been provided that observes this convention. The templates for KSC specifications (KDP-F-5406) and KSC standards (KDP-F-5407) also follow this convention. In such documents, major divisions start on right-hand pages, and therefore, some left-hand pages will necessarily be blank. Once numbered pages appear in a document, whether Roman or Arabic, all pages (sides) need to be accounted for. In head-to-head formatting, the following document sections begin on right-hand pages: cover page; title page; additional signature page (if required); foreword; executive summary; table of contents; list of abbreviations, acronyms, and symbols; body of document; and individual appendices. Please see the paragraphs listed for page assignments for the following document elements:

- Record of revisions (6.2.3).
- Lists of figures and tables (6.2.6).
- List of abbreviations, acronyms, and symbols (6.2.7).

When a document element other than the cover page, the title page or a separate signature page (if it is not backed up by a record of revisions [see 6.2.2]), or a tabloid page (see 5.5) ends on a right-hand page, it is backed up by an even-numbered, left-hand page bearing the text *This page intentionally left blank.* This blank-page text is centered in 12-pt Times New Roman type on the 13th line. This formatting is available in the appropriate templates by applying Blank Page Text style and inserting Blank Page Text AutoText.

5.5 Tabloid Pages

Occasionally a tabloid page (17 inches wide by 11 inches high) may be required to accommodate a large table or figure. To prepare the hard copies of tabloid pages for issuance, fold the right side of the page at 8.5 inches (fold in half) so the image surfaces meet. Then fanfold the excess on top of itself so the right edge of the paper meets the 8.5-inch fold line.

5.5.1 Tabloid Pages in Documents Formatted Face-Only

To establish tabloid pages in documents formatted face-only, insert a next-page section break after the last paragraph that precedes the oversized material. In the page setup of the new section, change the paper size to 17 inches wide by 11 inches high. Maintain portrait orientation. This will keep the header and footer correctly positioned along the longer dimension. Insert another next-page section break at the end of the last consecutive tabloid page. For each tabloid page, it may be necessary to adjust the tab position in the footer to align the page number at the center of the now-much-wider page. In the section that should return to normal dimensions, change the page setup back to the default paper size (8.5 inches wide by 11 inches high).

5.5.2 Tabloid Pages in Documents Formatted Head to Head

Tabloid tables or figures should be on right-hand pages (see 5.4.2). The left-hand, backup pages will be completely blank (no headers, footers, or *This page intentionally left blank.*). To accomplish this, insert an odd-page section break after the last paragraph that precedes the oversized material. In the page setup of the new section, change the paper size to 17 inches wide by 11 inches high. Maintain portrait orientation. This will keep the header and footer correctly positioned along the longer dimension. Insert another odd-page section break at the end of the last consecutive tabloid page. For each tabloid page, open the footer and type a slash (/) immediately after the page number and follow it with the next consecutive number. It may be necessary to adjust the tab position in the footer to align the page number at the right margin. In the section that should return to normal dimensions, change the page setup back to the default paper size (8.5 inches wide by 11 inches high).

5.6 References to Material in the Current Document and Other Sources

Use the following guidelines when referring to material in the current document and to other documents in running text. These recommendations are aligned with the cross-reference features of MS Word. Using the heading styles, captions, and cross-reference features of MS Word is strongly recommended for the broad functionality these features provide. These features increase the accuracy of interior references and make references easier to update. KSC-YA-6197 provides detailed instructions on using these features.

a. Numbered sections: To refer, for example, to the sixth section as a whole, write "see Section 6," or "as discussed in Section 6." The cross-reference feature inserts only the heading number. Add the word *Section* manually (capitalized in roman type) for clarity and to maintain consistency with the cross-referencing patterns for figures and tables. There is no need to add a phrase such as "...of this document."

b. Numbered subsections: To refer to subsections (second-level sections or lower), write (cross-reference) the subsection number only (e.g., "see 6.1"). There is no need to add a phrase such as "...of this document."

c. Figures and tables: To refer to a figure or table, write, for example, "see Table 1," or "as shown in Figure 4." MS Word's cross-reference feature inserts the word and the number. If manually typing nonfunctional references, capitalize *Table* and *Figure* in roman type. MS Word's cross-reference feature does not allow for combining references to multiple items in the same field. Refer to each item separately, for example, "see Figure 1 and Figure 3" rather than "see Figures 1 and 2." For consistency, follow this convention even when not using the cross-reference feature in MS Word. There is no need to add a phrase such as "...of this document."

d. Appendices: Normally only an entire appendix is cited (e.g., "see Appendix A"). If a reference to an appendix subsection is needed for clarity, type *Appendix* (capitalized in roman type) and one space. Then either insert the cross-reference (see KSC-YA-6187 for specific instructions on using the cross-reference feature in MS Word) or type the nonfunctional subsection number (e.g., "see Appendix A.2"). There is no need to add a phrase such as "...of this document."

e. Equations: Refer to an equation only by the sequential number assigned to it. The equation number itself is enclosed in parentheses. Do not precede the reference with *Equation* unless the reference begins a sentence. If a reference to an equation occurs in text that is already enclosed in parentheses, continue to show the equation number in parentheses, unlike the similar situation described in 4.4. Treating equation numbers this way aligns with the automatic cross-referencing features of MS Word. There is no need to add a phrase such as "...of this document."

f. Pages: For consistency, when referring to a page in the current document, capitalize *Page.* There is no need to add a phrase such as "...of this document."

g. Other Sources: Refer to other Government and military documents and industry standards in running text by document number. The titles of such documents appear only in the lists of applicable and reference documents (see Section 2 for an example). Books whose only numerical identifiers are Library of Congress numbers or International Standard Book Numbers (ISBN) may be referred to by title.

6. DOCUMENT ELEMENTS

6.1 Multivolume Manuals or Documents

If the thickness of a printed document exceeds approximately 50 millimeters (2 inches) (approximately 800 pages or 400 sheets printed back to back), the document may be divided into two or more volumes and labeled Volume I of __, Volume II of __, etc. Each volume should have the same document number and overall title. However, separate volumes may contain separate subtitles when applicable. If one volume is given a subtitle, all volumes should be given distinct and different subtitles. Sections should not be split between volumes. Each volume should contain all the necessary document elements described in the remainder of Section 6. The volume number should appear on the top line of the header of each page, separated from the document number by a comma.

Particular care must be taken in the maintenance of multivolume documents to ensure that updates are reflected comprehensively and consistently across volumes. The release of revisions and cancellations may be limited to only certain volumes of multivolume documents depending on the extent of the updated information (see 7.2 and 7.3).

6.2 Front Matter

6.2.1 Cover Page

With the exception of KSC specification drawings, software version description documents (SVDDs), test procedures, and documents not intended for general KSC release, use KSC Form 16-12 for the cover. Use 18-pt Arial type for the document number, revision level, title, issue date, and responsible directorate as shown on the cover of this document. Each document template contains the corresponding KDP number and revision level in the footer of the cover page. At the author's discretion, the filename (use of a filename field is recommended) may be included in the footer in 6-pt Times New Roman type. Such an identifier can be useful for document tracking purposes. If used, the initials of assigned custodians, editors, illustrators, or word processing operators may follow this field separated by slashes.

Do not place additional logos in the footer of the cover page. Logos on document covers are not encouraged but may be included at the discretion of the document's approving authority to be consistent with other released project documentation.

Inside and outside margins of 1.0 inch are suitable. A top margin of 1.1 inches allows the document number and revision level to fit in the header. A bottom margin of 1.2 inches accommodates the footer material of KSC Form 16-12.

At the discretion of the document's author or approving authority, a measurement designation may be shown in the upper left corner of the cover page. Such designations are required for KSC specifications (see 8.1.1) and KSC standards (see 9.1.1). The designations are shown in Figure 1 and are available in the templates.

METRIC

METRIC/INCH-POUND

NOT MEASUREMENT-SENSITIVE

Figure 1. Measurement Designations

Documents in the NASA Scientific and Technical Information (STI) series (e.g., Technical Memoranda, Technical Publications, Special Publications, and Contractor Reports),which are intended to be released to the public, shall be reviewed prior to release in accordance with KDP-KSC-P-1212.

Other technical documents should be reviewed for export control. The author or the approving authority should request that Export Control (TA-E1) review the document in accordance with KDP-KSC-P-2613. If such a review is requested, an export control sign-off statement (Figure 2) should be added to the document cover and submitted to Export Control. Once the review is completed and signed cover page is returned, the export control sign-off in the electronic file (that is maintained in a word processing application as the basis for future revisions) may be modified to reflect the original handwritten notation. Type *osb* (original signed by) before the name of the export control representative. The export control sign-off is available in the templates as AutoText.

This document does/does not contain export-controlled technical
data in Category/ECCN: ______________________________.
Classified by ________________________ on ____/____/______.

Figure 2. Export Control Sign-Off

If the document is determined to contain technical information subject to International Trade in Arms Regulations (ITAR) (see Figure 3) or Export Administration Regulations (EAR) (see Figure 4), the appropriate notice should appear on the cover page. Place the notice below the export control sign-off, between the document title and the issue date. Both notices are available in the templates.

See 7.1.1 and 7.2.1 for export control treatment of documents released by the Engineering Documentation Center (EDC).

International Traffic in Arms Regulations (ITAR) Notice

This document contains information which falls under the purview of the U.S. Munitions List (USML) as defined in the International Traffic in Arms Regulations (ITAR), 22 CFR 120-130, and is export controlled. It shall not be transferred to foreign nationals in the U.S. or abroad, without specific approval of a knowledgeable NASA export control official, and/or unless an export license/license exemption is obtained/available from the United States Department of State. Violations of these regulations are punishable by fine, imprisonment, or both.

Figure 3. ITAR Notice

Export Administration Regulations (EAR) Notice

This document contains information within the purview of the Export Administration Regulations (EAR), 15 CFR 730-774, and is export controlled. It may not be transferred to foreign nationals in the U.S. or abroad without specific approval of a knowledgeable NASA export control official, and/or unless an export license/license exception is obtained/available from the Bureau of Industry and Security (BIS), United States Department of Commerce. Violations of these regulations are punishable by fine, imprisonment, or both.

Figure 4. EAR Notice

Cover pages are like book covers and do not have page numbers, with the exception of documents printed on spec drawing paper.

In head-to-head formatting (see 5.4.2), the cover page is a right-hand page, the back of which is always blank and unnumbered. The appropriate templates provide for the blank back with an odd-page section break at the bottom of the cover page. The blank sheet is necessarily included when a single-sided original is printed using these templates.

6.2.2 Title/Signature Page

The title or signature page is the first page of the document. It is the first page of the Roman-numbered front matter and is therefore considered page i, though the page number should not appear. In head-to-head formatting, the title page is always a right-hand page. Use 18-pt Arial type for the document number, revision level, title, and issue date and to show the name of the Center as on the title page of this document. Do not place logos, drawings, or photographs on a title page.

Try to limit the signatures to those essential to adequately track responsibility. The templates provide two signature layouts—a double-column layout and a centered, single-column layout. The single-column layout is suitable for up to three signatures. The double-column layout is better suited to at least four signatures. Show the names, mail codes, and functional titles of signatories below signature lines in 10-pt Arial type. First and middle initials and last names are adequate for identification, but fuller representations may be used to suit individual signatories. If more signatures are required than will fit comfortably on the title page, establish another page for all or part of the signatures. The document title, issue date, Center name, and supersession statement may be omitted from such a page to make room for signatures. A second signature page should be a right-hand page numbered iii in documents formatted head to head and ii in a document formatted face-only.

The following statement appears on the title page below the signatures and above the issue date, centered, in 11-pt Arial type:

This Revision Supersedes All Previous Editions of This Document

For a single title page, the following margins are suitable: inside and outside margins of 1.0 inch; top margin of 1.1 inches to allow the document number and revision level to fit in the header; bottom margin of 1.2 inches to accommodate the Center name. For an additional page of signatures, the following margins are suitable: inside and outside margins of 1.0 inch; top margin of 1.3 inches; bottom margin of 1.2 inches. (These margins apply to all pages of the document except the cover page and title page.) Table 2 shows the margins to apply to the different page layouts in a document.

Table 2. Page Layout Settings (Inches)

Page	Top Margin	Bottom Margin	Inside Margin	Outside Margin
Cover page	1.1	1.2	1.0	1.0
Title page	1.1	1.2	1.0	1.0
All other pages	1.3	1.2	1.0	1.0

6.2.3 Record of Revisions

The record of revisions is a table that catalogs the initial release and subsequently released revisions of a document. (See the example on Page ii.) It is appropriate for all numbered KSC documents except KSC specifications, KSC standards, and any documents printed on spec drawing paper (see 10.1). The record may extend for as many pages as are required. Repeat the two rows of column headings on each page. It is best to not allow the data rows to break across pages. The description of the revision should be concise. Ensure that the descriptions of previous revisions and changes are copied exactly. Because changes (as opposed to full revisions) may have been released for legacy documents that are now being updated using one of the templates, it may be necessary to add a CHANGE NO. column to the record of revisions to thoroughly and adequately reflect the document release history. If necessary, add this column between REV LTR and DESCRIPTION (see 7.2). Use the issue date from the cover of the document. A sample table for the record of revisions is included in the appropriate templates as AutoText.

In documents printed head to head, the record customarily backs up the title page and is numbered ii. If a separate signature page is necessary, the record of revisions may back up that page and be numbered iv. If the record of revisions ends on an odd-numbered (right-hand) page, it should be backed up with an even-numbered page bearing the text *This page intentionally left blank* (e.g., see Page iv; also see 5.4.)

In documents printed face-only, the record follows the title page (or additional signature page if one was required) and is numbered ii or iii, accordingly.

6.2.4 Opening Elements

Any of the following elements may be included in a given document at the author's discretion, except as noted in Section 8 through Section 13. It is important to review the continued applicability of these elements when a document is revised. Except as noted in the following subsections, each opening elements begins on a new page. In documents formatted head to head, unless otherwise noted, these elements begin on odd-numbered (right-hand) pages. When such an element ends on an odd-numbered page, it should be backed up with an even-numbered page bearing the text *This page intentionally left blank.* (See 5.4.)

6.2.4.1 Foreword

A foreword should not contain material that is essential to the understanding of the document as a whole unless that material is repeated in the body of the document. The reader should be able to bypass the foreword without consequence. Forewords often contain interesting though nonessential background, such as how a project was conceived or its history, and are customarily written by someone other than the author of the document. Center the word ***FOREWORD*** on the top line using 12-pt, bold Times New Roman type in uppercase letters. Allow 24 pt (two blank lines) between this title and the text. In the templates, use Body Title style. After the last paragraph, the author of the foreword may be identified. Allow at least one blank line between the last paragraph and the name and title of the author of the foreword, aligned at the left margin.

6.2.4.2 Acknowledgements

Acknowledgements may be written to recognize and thank individuals and organizations for their contributions to the content or preparation of the document. Be complete and take care to show all names and titles, accurately reflecting individuals' preferences.

Acknowledgements may follow the foreword on the same page provided the layout is visually pleasing. Do not start the acknowledgements close to the bottom of the page or allow only a few names or organizations to be isolated on the following page. In documents printed head to head, acknowledgements may back up the foreword on a left-hand page. If acknowledgements start on a new page, center the word ***ACKNOWLEDGEMENTS*** on the top line using 12-pt, bold Times New Roman type in uppercase letters. Allow 24 pt (two blank lines) between this title and the text. If acknowledgements follow the foreword on the same page, double-space (at a minimum) between the foreword text and the acknowledgements title. In the templates, use Body Title style.

6.2.4.3 Executive Summary

It is important to approach an executive summary with two areas of focus. The first is to identify the intended audience. It may be a single executive, a group of known executives, or an unknown group. The more specifically the author can identify the intended audience, the more effective the executive summary is likely to be.

The second area of focus is the purpose. Determine the action or condition that is desired of the intended audience based on their reading of the executive summary. Speak directly to that purpose in the executive summary, whether to report status, to promote interest, to provide possible recommendations or solutions, or to gain concurrence.

An executive summary should contain all the information required to adequately inform its intended audience, including figures and tables. However, it should be written at a level high enough to require only a few figures or tables (if any) and preclude the need to number them. If it becomes necessary to number figures or tables in the executive summary, number and label them beginning with Executive Figure 1 and Executive Table 1. See KSC-YA-6197 for using the automatic caption feature to label figures and tables in the executive summary.

Likewise, while it may be necessary to divide the executive summary into sections and subsections, no more than three levels should be included, in keeping with the high content level. Accordingly, numbering the sections and subsections should be avoided. Use the following guidelines to format the section and subsection headings in the executive summary.

a. First Level: Bold, 12-pt Times New Roman type in uppercase letters aligned at the left margin.

b. Second Level: Bold, 12-pt Times New Roman type, using title capitalization (see 4.10), aligned 0.5 inch from the left margin. Align runover text with the first line of the heading.

c. Third Level: Bold, italic, 12-pt Times New Roman type, using title capitalization (see 4.10), aligned 1.0 inch from the left margin. Align runover text with the first line of the heading.

Because the executive summary is part of the front matter, none of its elements are shown in the table of contents or the lists of figures and tables.

The executive summary should not contain references to the body of the document or to its appendices. It should stand alone and adequately inform its intended audience as if it were a separately published document.

There is no minimum or maximum length for an executive summary, though for courtesy, it should be as short as possible to serve its purpose. A very long document may naturally require a substantial executive summary. Short documents do not need executive summaries. Always keep the audience and purpose in mind. Do not write an executive summary out of habit or perceived obligation.

Center the words ***EXECUTIVE SUMMARY*** on the top line using 12-pt, bold Times New Roman type in uppercase letters. Allow 24 pt (two blank lines) between this title and the text. In the templates, use Body Title style.

6.2.5 Table of Contents

A table of contents is required for all numbered KSC documents. Center the word ***CONTENTS*** on the top line, using 12-pt, bold Times New Roman type in uppercase letters. Allow 24 pt (two blank lines) between this title and the beginning of the table. (In the templates, using Body Title style correctly formats the title and inserts the correct spacing.) Start with the first numbered heading in the body of the document. Do not include front-matter elements in the table of contents. Separate the subsequent first-level headings from preceding lines with a double space. Align heading numbers at the left margin. Align the heading titles (exactly as they appear in the body of the document and appendices) 1.25 inches from the left margin. This spacing allows fifth-level heading numbers and first-level appendix indicators to fit comfortably. Lower levels do not need to be included in the table of contents. Align any runover title text with the beginning of the title text. Align page numbers at the right margin, with leader dots from the end of the text. If the table of contents extends to another page, do not repeat the ***CONTENTS*** title. Refer to the table of contents in this document for the proper formatting. The formatting is automatic in the templates if the Heading styles and Appendix styles are used properly. Tables of contents generated in the template will show headings through the fifth level.

6.2.6 Lists of Figures and Tables

A list of figures is highly recommended if there are five or more figures. The list of figures follows the table of contents and may begin on the last page of the table of contents if the layout is visually pleasing. Do not start the list of figures close to the bottom of the page, especially if only a few figure titles will roll to the following page. In a document printed head to head, the list of figures may start on either a left- or right-hand page. Center the word ***FIGURES*** using 12-pt, bold Times New Roman type in uppercase letters. Allow 24 pt (two blank lines) between this title and the beginning of the list. (In the templates, using Body Title style correctly formats the title and inserts the correct spacing.) Align the word *Figure* (in 12-pt Times New Roman type) at the left margin, followed by the number and a period. Align the figure title (exactly as it appears in the figure caption) 1.25 inches from the left margin. Align any runover title text with the beginning of the title text. Align page numbers at the right margin, with leader dots from the end of the text. If the list of figures extends to another page, do not repeat the ***FIGURES*** title. Refer to the list of figures in this document for the proper formatting. The formatting of lists of figures is automatic in the templates if the figure caption functions are used properly.

A list of tables is highly recommended if there are five or more tables. The list of tables follows the list of figures or the table of contents (if no list of figures is included) and may begin on the last page of either if the layout is visually pleasing. Do not start the list of tables close to the bottom of the page, especially if only a few table titles will roll to the following page. Center the word ***TABLES*** using 12-pt, bold Times New Roman type in uppercase letters. Allow 24 pt (two blank lines) between this title and the beginning of the list. (In the templates, using Body Title style correctly formats the title and inserts the correct spacing.) Align the word *Table* (in 12-pt Times New Roman type), at the left margin followed by the number and a period. Align the table title (exactly as it appears in the table caption) 1.25 inches from the left margin. Align any runover title text with the beginning of the title text. Align page numbers at the right margin, with leader dots from the end of the text. If the list of tables extends to another page, do not repeat the ***TABLES*** title. Refer to the list of tables in this document for the proper formatting. The formatting of lists of tables is automatic in the templates if the table caption functions are used properly.

6.2.7 List of Abbreviations, Acronyms, and Symbols

A list of abbreviations, acronyms, and symbols is highly recommended if more than 15 abbreviations are used in the document. Center the words ***ABBREVIATIONS, ACRONYMS, AND SYMBOLS*** on the top line, using 12-pt, bold Times New Roman type in uppercase letters. Refer to the list in this document for the proper formatting. List abbreviations and acronyms in alphabetical order, using MS Word's sorting feature (highlight the entire list and click *Table* | *Sort.* In the *Sort by* section at the top of the dialog box, select *Paragraph* | *Text* | *Ascending.* Line spacing of 1.5 is used to separate the entries and is accomplished in the templates by applying Abbreviation style. When showing the words the abbreviation represents, apply capitalization as if the words occurred in the middle of a sentence. Align the abbreviation at the left margin. Align the words that the abbreviations represent 1.0 inch from the left margin. Align any runover text 1.0 inch from the left margin.

6.3 Headers and Footers

This section describes headers and footers for all pages other than the cover page and title page. See 6.2.1 and 6.2.2 for headers and footers on those pages.

The header begins 0.5 inch below the top edge and ends 1.3 inches below the top edge of the sheet. This allows comfortable space for the document number and the revision level on separate lines with space separating them from the text area. Material in headers is shown in 12-pt Times New Roman type. In documents formatted face-only, headers are aligned at the right margin. In documents formatted head to head, headers for left-hand (even-numbered) pages are aligned at the left margin, and headers for right-hand (odd-numbered) pages are aligned at the right margin.

The last possible line of the text area rests 1.2 inches above the bottom edge of the sheet. The footer is separated from the text area by 0.375 inch and occupies the remaining printable length of the page. Page numbers are 12-pt Times New Roman type. Each template displays the corresponding KDP Form number in the footer. In documents formatted face-only, page numbers are aligned at the right margin. In documents formatted head to head, page numbers for even-numbered pages are aligned at the left margin, and page numbers for odd-numbered pages are aligned at the right margin.

For numbered, released KSC documents, no other information is necessary in the header or footer. For other documents, such as white papers and proposals, other specific information may be included.

6.4 Body of Document

Start the body of the document on a new page (a right-hand page for documents formatted head to head), numbered 1, and center the title of the document on the top line in bold, 12-pt Times New Roman type, using uppercase letters. Allow 24 pt (two blank lines) between the title and the first heading or paragraph. For many documents (e.g., KSC specifications, KSC standards, project plans) particular content and order are required and laid out in the corresponding templates. For other documents (e.g., technical reports and test reports), the specific content and order are not set but, rather, tailored by the author to suit the subject. Nevertheless, the first section usually deals with purpose, scope, introduction, or some combination of these topics. Take care in organizing the content to ensure it is complete, logical, and consistent.

6.5 List of Documents

Lists of other documents often constitute the second section of a document. Unless a particular revision or edition of a work is identified, the most current revision or edition applies. The list of documents is arranged alphanumerically by document number along with the title. Document numbers are aligned 0.5 inch from the left margin. Document titles begin on the same lines as the document numbers, aligned 3 inches from the left margin. Runover title text is aligned with the beginning of the title. All lines of text related to a single document should be kept together and not break across pages. This formatting is achieved in the templates by inserting and populating Doc List Format AutoText, a borderless table.

The title of the section is usually APPLICABLE DOCUMENTS. However, it is sometimes useful to differentiate between applicable documents (ones that are called out in the current document and whose authority is transferred to the current document to a specified degree) and reference documents (ones not necessarily called out in the current document but that provide additional, nonessential information). If this distinction is desired (in other than a KSC specification or a KSC standard), title the section (e.g., Section 2) "DOCUMENTS," and title the subsections (e.g., 2.1 and 2.2) "Applicable Documents" and "Reference Documents," respectively.

The following sentence is appropriate to introduce applicable documents:

> The following documents form a part of this document to the extent specified herein.

See Section 2 for an example of the formatting of applicable documents.

Though only required in KSC specifications and KSC standards, the inclusion of document sources may be helpful to organize and display documents. If document sources are included, use them consistently throughout the section. Left-align the name of the source (e.g., Lyndon B. Johnson Space Center) 0.5 inch from the left margin. Underline the source and use title capitalization (see 4.10). Alphabetize the document sources. This formatting is achieved in the templates by using Applicable Document Source style for the document source. Display the documents for each source in alphanumeric order by document number. Double-space above and below the source.

6.6 Tables

A text reference (e.g., “see Table 1”) should precede the table’s appearance. Place the table as close as is practical following the paragraph where the reference occurs. Try to keep all the rows of a table on the same page. To achieve this, other paragraphs may be placed between the reference paragraph and the table, but no other tables or figures may be placed out of turn. Center the table caption above the table with a blank line between the caption and table. Leave a blank line between the table caption and the preceding paragraph. The caption is shown in 12-pt, bold Times New Roman type and consists of a label, a number (followed by a period), and a title. Separate the title from the table number with a single tab. (This convention is adopted because it seamlessly integrates table numbers and titles into the automatic list of tables used in the templates.) Use title capitalization (see 4.10) for the table title without end punctuation.

Table numbering starts with 1 and continues through the appendices. There is no need to identify sections or subsections in the table number. A single sequential numbering scheme is easier for the reader. See 6.2.4.3 for recommendations about tables occurring in the executive summary.

Tables should be centered between the margins and organized as concisely as possible. The headings of columns should be bold and centered vertically and horizontally. Text in data rows should be aligned to best suit the content. Format numbers in a column consistently (i.e., show the same number of decimal places). Columns of numbers should be aligned on a common decimal point and then centered as a column. See Table 2 for an example of numbers arranged in columns.

Use consistent line weights and styles for tables throughout a document. All lines may be of the same weight, or heavier lines may be used to border the entire table, to separate rows of column headings from data rows, to separate major divisions of content by rows, or to separate a note row from the body of the table.

Do not allow data rows to break across pages. When a table must be continued to another page, repeat the column headings on the continuation. Do not repeat the caption when continuing a table to another page. Particularly wide tables may benefit from a landscape orientation. In such cases, place the caption along the left margin (11-inch dimension).

Any abbreviations in tables that are not previously called out in text should be called out in a note cell in the last row. The note cell should be the width of the table. In the note cell, first address any general notes to the table as a whole. Then address notes to specific cells. Flag the cell text with a lowercase, superscript note letter (^{a}, ^{b}, etc.) at the end of the text. Assign note letters in the table from left to right, top to bottom. See Table 1 for an example of recommended table layout with notes.

Above all, use a consistent table layout throughout a document and especially for tables on facing pages. For data rows, 8- to 10-pt type is readable and helps keep tables compact. Adequate and consistent margins (top, bottom, left, and right) should be used for all cells to provide a comfortable space between type and lines. Margins of 0.03 inch are usually adequate.

6.7 Figures

A text reference (e.g., "see Figure 1") should precede the figure's appearance. Place the figure as close as is practical following the paragraph where the reference occurs. This often requires placing the figure at the top of the following page. Other paragraphs may be placed between the reference paragraph and the figure, but no other tables or figures may be placed out of turn.

Figures are centered between the inside and outside margins and separated from the preceding paragraph by a blank line. Double-space between the figure and the caption. Center the figure caption below the figure. The caption is shown in 12-pt, bold Times New Roman type and consists of a label, a number (followed by a period), and a title. Separate the title from the figure number with a single tab. (This convention is adopted because it seamlessly integrates figure numbers and titles into the automatic list of figures used in the template.) Use title capitalization (see 4.10) for the figure title without end punctuation.

Figure numbering starts with 1 and continues through the appendices. There is no need to identify sections or subsections in the figure number. A single sequential numbering scheme is easier for the reader. See 6.2.4.3 for recommendations about figures occurring in the executive summary.

If the document content calls for a sentence- or paragraph-style figure caption, it may be shown below the figure title. To display such caption notes, indent 1.0 inch from the normal left and right margins. Use 10-pt Times New Roman type and double-space before and after the caption note. Using a caption note instead of a normal figure caption is not recommended because it provides no title to display in the list of figures. Try to avoid the use of caption notes by incorporating their content into the text where the figure is introduced and discussed.

Try to maintain a portrait orientation for all figures, but set them as landscapes when necessary. Crop figures tightly and remove extraneous borders and labels. In landscapes, place the top of the figure along the left margin (11-inch dimension) whether on an even- or odd-numbered page. A figure may be continued to any number of additional sheets. In such a case, repeat the caption for each additional sheet, using the same figure number. After the title of each mulitsheet figure, type "(Sheet x of y)" in 12-pt, bold Times New Roman type, where x is the sheet number (starting with 1) and y is the total number of sheets for that figure. See KSC-YA-6197 for specific instructions on using the caption and cross-reference features of MS Word to effectively label multisheet figures.

Drawings shall comply with GP-435. For photographs, block diagrams, and other simple drawings that are not constructed in drafting programs, labels and other text should be in 8-pt Arial type, using uppercase letters. Simple leaders with arrowheads are appropriate. Use black text and leaders on light backgrounds, white text and leaders on dark backgrounds. Use transparent, borderless textboxes when necessary. Any abbreviations used in figures that are not called out earlier in the document should be listed in a legend in the figure.

6.8 Bulleted Lists

Use bullets to introduce items in a list when the order of the items is not important and when there will be no need to refer to individual items elsewhere in the document. Three levels of bullets are recommended with attributes shown in the following list. Remember to avoid subdividing an item into only one item at a lower level. Double-space between bulleted items, as well as between a bulleted item and any other element (regular paragraph, heading, figure, etc.) that precedes or follows it. The following bulleted list is an example of bullet styles and alignment, not list organization.

- First Level: Align a dot bullet 0.5 inch from the left margin. Align all text 1.0 inch from the left margin.
  - — Second Level: Align a dash bullet (not a hyphen) 1.0 inch from the left margin. Align all text 1.5 inches from the left margin.
    - ▪ Third Level: Align a square bullet 1.5 inches from the left margin. Align all text 2.0 inches from the left margin.

The underlining in the preceding bulleted list was applied manually to provide visual emphasis. Use bold and underlining to suit the particular content, but apply the formatting consistently.

In the templates, formatting of bulleted lists is achieved by applying the List Bullet styles.

6.9 Ordered Lists

Use letters and numbers to introduce items in a list when the order of the items is important or when it may be necessary to refer to individual items elsewhere in the document. Four ordered levels are recommended with attributes shown in the following list. Remember to avoid subdividing an item into only one item at a lower level. Double-space between list items, as well as between a list item and any other element (regular paragraph, heading, figure, etc.) that precedes or follows it. Only one ordered list may appear within a single numbered subsection. The following ordered list is an example of bullet styles and alignment, not list organization.

a. First Level: Right-align lowercase letters (beginning with a) followed by a period 0.7 inch from the left margin. (This provides a consistent space between the letters and the text no matter how many items are in the list.) Align all text 1.0 inch from the left margin. If there are more than 26 entries at this level, use the following sequence beginning with the 27th item: aa., bb., etc. This pattern aligns with the default of MS Word.

    (1) Second Level: Left-align numerals in parentheses (beginning with 1) 1.0 inch from the left margin. Align all text 1.5 inches from the left margin.

        (a) Third Level: Left-align lowercase letters (beginning with a) 1.5 inches from the left margin. Align all text 2.0 inches from the left margin. If there are more than 26 entries at this level, use the following sequence beginning with the 27th item: aa., bb., etc. This pattern aligns with the default of MS Word.

            (i) Fourth Level: Right-align lowercase Roman numerals (beginning with i) 2.2 inches from the left margin. Align all text 2.5 inches from the left margin.

The underlining in the preceding ordered list was applied manually to provide visual emphasis. Use bold and underlining to suit the particular content, but apply the formatting consistently.

In the templates, formatting of ordered lists is achieved by applying List Number styles. Note that when the number or letter of any level advances the numbers or letters of the lower levels must restart at (1), (a), or (i). KSC-YA-6197 provides instructions on restarting the numbering of ordered lists in the templates.

6.10 Notes, Cautions, and Warnings

Notes, cautions, and warnings are important additions to the text and are formatted to draw visual attention. The title ***NOTE, CAUTION,*** or ***WARNING*** is separated from the preceding paragraph (the paragraph to which the note, caution, or warning applies) by a blank line. The title is centered and underlined in 12-pt, bold Times New Roman uppercase letters. Double-space between the title and the text of the note, caution, or warning. The text of the note, caution, or warning is left-aligned 1.5 inches from the left margin. Use a block-style paragraph (no indentation of the first line) with runover text aligned at 1.5 inches. The right margin of the note text is indented 1.5 inch from the regular right margin position (i.e., the absolute right margin of note text is 3.5 inches from the right edge of the paper). Double-space between the text of the note, caution, or warning and the material that follows it.

A note applies to an operating procedure or condition that should be highlighted.

A caution applies to operating procedures and practices that, if not strictly observed, will result in damage to or destruction of equipment.

A warning applies to operating procedures and practices that may result in personal injury or loss of life if not correctly followed.

If any combination of warnings, cautions, or notes applies to the same text, the warning should appear first, followed by the caution and then the note.

If multiple notes, cautions, or warnings apply to the same text, show the title in plural and number the notes, cautions, or warnings beginning with 1.

The text of notes, cautions, and warnings should be short and concise, but complete. Make every effort to avoid breaking the text of a note, caution, or warning across pages.

The formatting for the titles and text of notes, cautions, and warnings is achieved in the templates by applying Note Title style, Note Text style, and Numbered Note Text style.

6.11 Mathematical Expressions or Equations

Short mathematical expressions or equations can be treated as part of the text when it is convenient to do so. Such expressions should not break to a second line and should not be cited elsewhere in the text. To express dimensions within the text, write, for example, "a 5- by 10-mm area." To express a pure value within the text, write, for example, "4.2×10^6." Do not use the letter *x* in place of *by* or the multiplication sign (×). Use "±" instead of "+/–."

Mathematical expressions or equations that are longer than just a few characters, have more than one vertical level, or will be cited elsewhere in the text should be centered on a separate line. A text reference should precede the appearance of such an equation. The reference should be, for example, "as shown in (1)." Equations are numbered beginning with 1 and continue through the body of the document and the appendices. The number is enclosed in parentheses at the right margin on the same line as the equation. This number is considered the equation's caption.

Equations should be composed in an editing program such as MS Equation 3.0. This will ensure proper formatting. Show all numerals in roman (upright) type. Show all variables in italics. Show all chemical symbols, trigonometric terms, and any other intervening text in roman type. Show vectors in bold. Consult the *GPO Style Manual* for specific conventions of displaying equations. In the templates, use the *Insert* | *Reference* | *Caption* function and the *Insert* | *Reference* | *Cross-reference* function. See KSC-YA-6197 for specific instructions on inserting equations and references to equations and establishing the cross-reference label for equations. An example of an equation properly formatted using template functions is shown in (1).

$$B^k = \frac{\mu_0 i(t)}{2} \sum_{m=(M_z-1)/2}^{(M_z-1)/2} \sum_{n=0}^{M_x-1} \left(\frac{(a+nd_x)^2}{\left[(a+nd_x)^2 + (z_k - md_z)^2 \right]^{3/2}} \right) \qquad (1)$$

where variable = value
variable = value
variable = value
variable = value.

Equations are considered complete sentences and require no end punctuation when they appear on a separate line as in (1). Likewise, if an equation on a separate line completes a sentence, the end punctuation is not shown. Use proper punctuation for the portion of the sentence that precedes the mathematical expression. In the preceding example, the list of variables and values completes the sentence started by the equation. In such a list of equation notes, punctuation is only necessary to end a sentence. If only one or two equation notes are used, they may be displayed in the running text with normal punctuation. Use proper end punctuation for sentences that close with mathematical expressions in the running text.

6.12 Measurements

Apply a consistent system of measurements throughout the document. Metric measurements are preferred. Do not mix metric and U.S. customary measurements except to use metric values and follow them in parentheses with the U.S. customary equivalents. Express values in the largest units practicable. As a rule, place one space between the number and the unit (unless the measurement functions as a modifier [e.g., "a 3-inch-diameter pipe" as opposed to "a pipe that is 3 inches in diameter"]), place the degree symbol tight against the abbreviations for Celsius and Fahrenheit (e.g., 0 °C or 32 °F), and spell out units when they are not preceded by a value (e.g., "dimensions are given in millimeters"). The same unit used in quick succession or for each item in a series need not be repeated (e.g., "an area measuring 3 by 4 mm" and "charges of 10, 100, and 1,000 V"). Consult KSC-DM-3673 for expressing metric measurements and the *GPO Style Manual* for expressing measurements in general. Express the values of measurements in numerals rather than words except when such values begin a sentence. Consider rephrasing such sentences to reposition the measurement.

6.13 Measurement Designations

6.13.1 Metric

At the discretion of the author or the approving authority, documents (other than KSC specifications and KSC standards) that contain only measurements that comply with the International System of Units (SI) may bear the metric designation in the upper left corner of the cover. Such documents are prepared in accordance with KSC-DM-3673. The metric designation is shown in Figure 5 and is available as AutoText in the templates.

METRIC

Figure 5. Metric Designation

6.13.2 Metric/Inch-Pound

At the discretion of the author or the approving authority, documents (other than KSC specifications and KSC standards) that contain SI measurements followed in parentheses by the U.S. customary equivalents may bear the metric/inch-pound designation in the upper left corner of the cover. The metric/inch-pound designation is shown in Figure 6 and is available as AutoText in the templates.

METRIC/INCH-POUND

Figure 6. Metric/Inch-Pound Designation

When a value is referenced in two measurement units and is repeated in a paragraph, there is no need to repeat the secondary unit in the same paragraph.

6.13.3 Not-Measurement-Sensitive Designation

Documents that do not contain information dependent on any particular measurement system are considered to be not measurement-sensitive and may bear the corresponding designation in the upper left corner of the cover at the discretion of the author or the approving authority. The not-measurement-sensitive designation is shown in Figure 7 and is available as AutoText in the templates.

NOT MEASUREMENT-
SENSITIVE

Figure 7. Not-Measurement-Sensitive Designation

6.14 Appendices

Appendices are appropriate for large amounts of data or any supplemental reference information that will not flow smoothly in the body of the document. Do not reproduce other documents and attach them as appendices. Appendices are identified by capital letters starting with A and follow the order in which they are cited in the text. Each appendix should have a text reference. Each appendix starts on a new page (a right-hand page for documents formatted head to head). If it is necessary to divide an appendix into subsections, those headings should have titles and should be outline-numbered in the following pattern: A to identify the appendix title, A.1 to identify the first-level appendix subsection, A.1.1 to identify the second-level appendix subsection, etc. This outline numbering is achieved in the templates by applying Appendix styles 1 through 9. The same writing and formatting conventions that apply to the body of a document (titles, spacing, margins, figures, tables, notes, etc.) apply to appendices. Only the letters and titles of the appendices are shown in the table of contents.

7. DOCUMENT RELEASE AND DISTRIBUTION PROCEDURES

7.1 Initial Release

Document numbers are obtained by NASA technical contacts, by NASA project managers, or by contractors acting at their request. At the discretion of the NASA technical contact or project manager, documents may be released through the Engineering Documentation Center (EDC) or the TechDoc system. The document repository is maintained for the life cycle of the document (i.e., for all revisions).

7.1.1 Initial Release Through EDC

Upon completion of a document to be released through EDC, a Document Release Authorization (DRA) (KSC Form 21-68) is prepared in accordance with KDP-KSC-P-1537, along with a Reproduction Assembly Sheet (KSC Form 16-133), if necessary for production. The NASA technical contact or NASA project manager secures all necessary signatures and delivers the signed document, signed DRA, and Reproduction Assembly Sheet to EDC for archiving and distribution. A contractor representative may deliver this material to EDC at the request of the NASA technical contact or project manager. The initial released versions of documents bear the words *REVISION BASIC* below the document number on all pages. On the cover and title pages, use 18-pt, bold Arial type in uppercase letters. On all other pages, use 12-pt Times New Roman type with title capitalization. Indicate the date of the initial release in the record of revisions.

If an Export Control review was obtained, the hard-copy cover bearing the signature of the export control representative should be delivered to EDC with the document for release. Documents that do not bear an export control sign-off (or an ITAR or EAR notice) will be released by EDC with a separate notice sheet indicating that the document has not been characterized for release in the public domain.

7.1.2 Initial Release Through TechDoc

Refer to KDP-P-2930 for preparation of documents for initial release through TechDoc.

7.2 Revisions

Revisions are updates of documents that have been released for general availability. Revisions of documents released through EDC are identified sequentially by capital letters beginning with A, excluding the letters I, O, S, X, and Z. When revisions to a document are numerous enough to exhaust the available single-letter designation, further revisions should be identified as AA, AB, AC, etc., again excluding the letters I, O, S, X, and Z. Confirm the current document level with EDC to start work on a revision.

NOTE

Revision A cannot be released before the basic document has been released. Likewise, revision B cannot be released before revision A.

A revision may follow the basic version or previous revision closely, or it may differ substantially in terms of content or organization. If the revision largely follows the preceding version, identify lines with added or deleted text by placing vertical lines (change bars) in the outer margins. This is achieved by using the track change function of MS Word. If the revision is a substantial departure from the preceding version, do not place change bars in the outer margin. The additions and deletions are not highlighted in the text itself. Only the additions and deletions that result from the current revision are marked with change bars. Additions and deletions within figures and tables are not identified with change bars.

The current revision level appears below the document number on each page. The letter, a brief description, and the issue date of each revision are entered sequentially in the record of revisions. In some legacy document, changes may have been issued, as well as full revisions. Such changes were updates to only a few pages of a document, distributed as hard-copy replacement pages. They were identified by the last revision letter and numbered sequentially beginning with 1 for each such released change (e.g., A.1, A.2). If such changes were issued prior to the revision currently being prepared, ensure that the contents of all the changes are reflected in the revision being issued and that the inclusion of all changes (by number) is mentioned in the description in the record of revisions (also see 6.2.3).

7.2.1 Release of Revisions Through EDC

The following letters are excluded from the sequence of letters that identify revisions to documents released through EDC: I, O, S, X, and Z.

A separate signature process, DRA, and Reproduction Assembly Sheet (if necessary) are required to release a revision (see 7.1) through EDC. See 6.1 for information about multivolume manuals and documents.

If an Export Control review was obtained, the hard-copy cover bearing the signature of the export control representative should be delivered to EDC with the document for release. Documents that do not bear and export control sign-off (or an ITAR or EAR notice) will be released by EDC with a separate notice sheet indicating that the document has not been characterized for release in the public domain.

7.2.2 Release of Revisions Through TechDoc

Refer to KDP-P-2930 for preparation and release of revised documents through TechDoc.

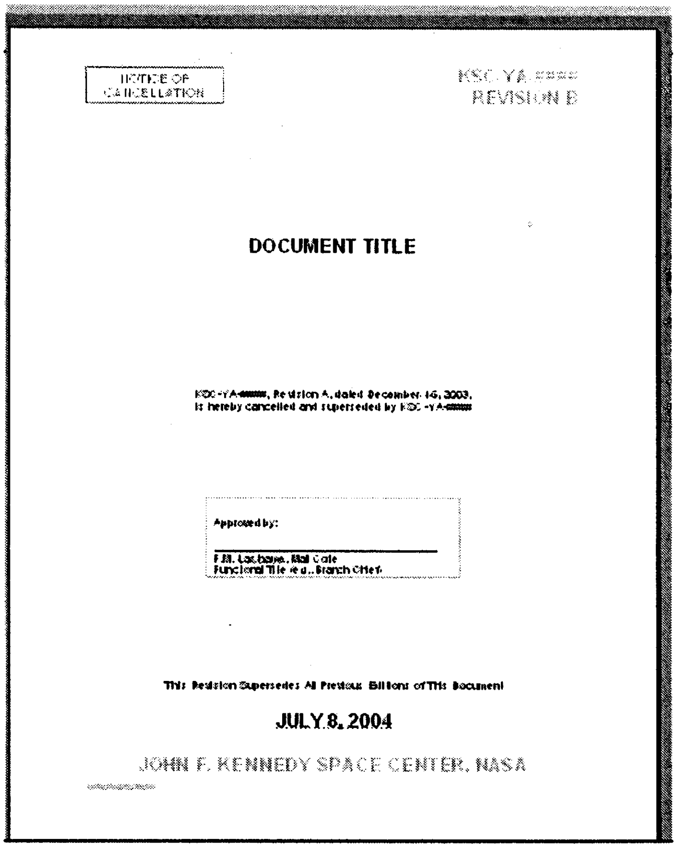
7.3 Cancellations

Any document can be canceled with or without supersession once the document is no longer applicable.

7.3.1 Cancellations Released Through EDC

Cancellation is accomplished by releasing the title page bearing a Notice of Cancellation box in the header as shown in Figure 8. The Notice of Cancellation box is available as AutoText in the templates. The revision level is raised, and the document date is changed to the effective date of the cancellation. The cancellation statement identifies the number and revision level of the document being canceled and the supersession, if any. The cancellation statement appears in 12-pt, bold Arial type, centered, and in uppercase letters. A sample cancellation statement that can be modified for the particular document is shown in the following paragraph. Only the signature of the approving authority needs to be shown on a cancellation title page. See KSC-YA-6197 for specific information on cancellation of KSC specifications and KSC standards.

KSC-STD-X-XXXX, DATED MONTH XX, XXXX, IS HEREBY CANCELED



NOTICE OF CANCELLATION

KSC-YA-####
REVISION B

DOCUMENT TITLE

KSC-YA-#####, Revision A, dated December 16, 2003,
is hereby cancelled and superseded by KSC-YA-#####

Approved by:

F.M. Lastname, Mail Code
Functional Title e.g., Branch Chief

This Revision Supersedes All Previous Editions of This Document

JULY 8, 2004

JOHN F. KENNEDY SPACE CENTER, NASA

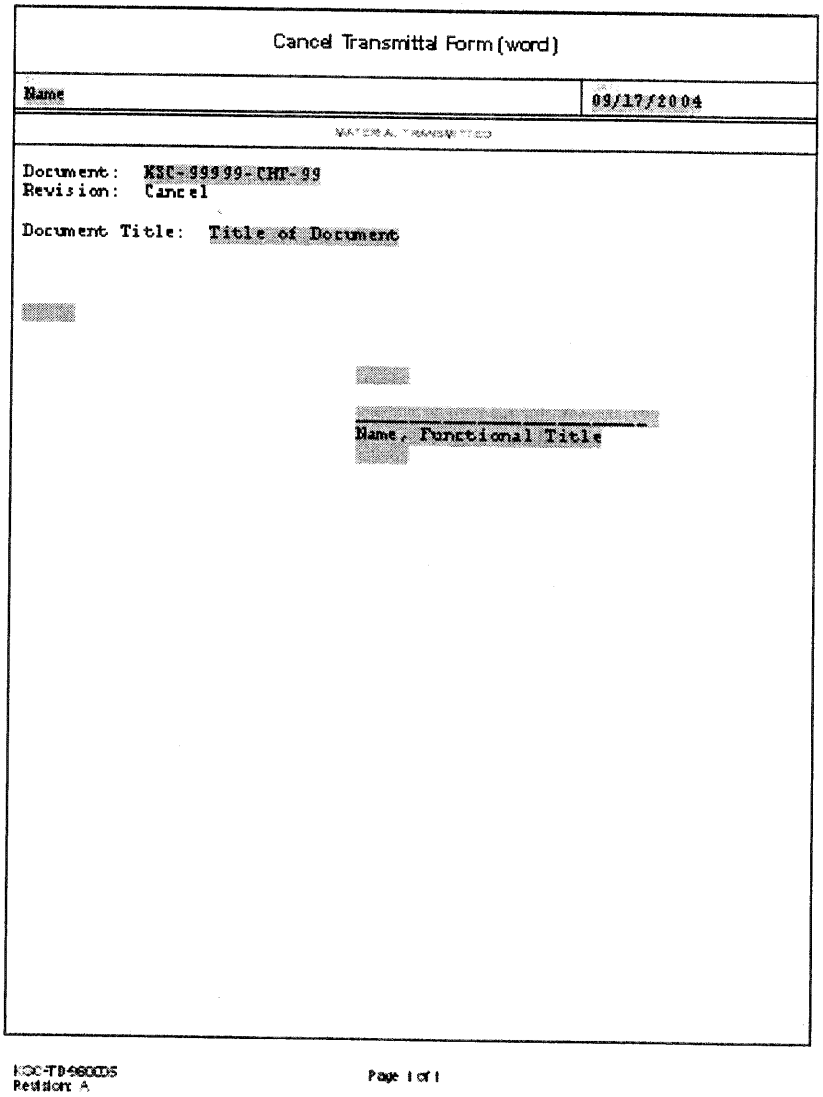
Figure 8. Sample Cancellation of Document Released Through EDC

A separate signature process, DRA, and Reproduction Assembly Sheet (if necessary) are required to release a cancellation through EDC (see 7.1). Also see 6.1 for information about multivolume manuals and documents.

7.3.2 Cancellations Released Through TechDoc

The Cancel Transmittal Form (KSC-TD-980005) is used to cancel a document released through TechDoc. Access the form at < http://tdsearch.ksc.nasa.gov/tdksc >. Click *Search TDKSC.* Select *Document number* as the *Search field* and enter *KSC-TD-980005* as the *Search text.* Click *Search.* Click the link for *KSC-TD-980005* and select the *.doc* file for the latest revision.

To complete the Cancel Transmittal Form, enter the date, document number, and document title in the corresponding form fields. Type signature lines, enter the names of signatories, save, and distribute the file for release in accordance with the configuration management plan for the particular project. A sample Cancel Transmittal Form is shown in Figure 9.



Cancel Transmittal Form (word)

Name	09/17/2004

MATERIAL TRANSMITTED

Document: KSC-99999-CHP-99
Revision: Cancel

Document Title: Title of Document

Name, Functional Title

KSC-TD-9800DS
Revision: A

Page 1 of 1

Figure 9. Sample Cancellation of Document Released Through TechDoc

8. KSC SPECIFICATIONS

KSC specifications have Centerwide authority and are filed in the KSC Library after release. Except as defined in this section, the guidelines for writing (Section 4), general formatting (Section 5), document elements (Section 6), and document preparation (Section 7) apply to KSC specifications. KSC specifications are formatted head to head.

8.1 Front Matter

8.1.1 Cover Page

Use KSC Form 16-12 for the cover. Use 18-pt, bold Arial type for the document number, revision level (which follows the document number on the same line), title, issue date, and responsible directorate as shown on the cover of the KSC Specification template (see KSC-YA-6197). Use 12-pt Arial type to indicate a superseded KSC specification in the header.

Do not place additional logos on the cover page.

Inside and outside margins of 1.0 inch are suitable. A top margin of 1.3 inches allows the document number, revision level, issue date, and supersession statement to fit in the header. A bottom margin of 1.2 inches accommodates the footer material of KSC Form 16-12.

A measurement designation is required in the upper left corner of the cover page. The designations are shown in Figure 1 and are available in the KSC Specification template.

At the author's discretion, the filename (use of a filename field is recommended) may be included in the footer in 6-pt Times New Roman type. Such an identifier can be useful for document tracking purposes. If used, the initials of assigned custodians, editors, illustrators, or word processing operators may follow this field separated by slashes.

If the KSC Specification contains technical information subject to ITAR (see Figure 3) or EAR (see Figure 4), the appropriate notice must appear on the cover page. Place the notice between the title and the name of the responsible directorate. Both notices are available in the KSC Specification template.

The cover page is a right-hand page, the back of which is always blank and unnumbered. The template provides for the blank back with an odd-page section break at the bottom of the cover page. The blank sheet is necessarily included when a single-sided original is printed.

8.1.2 Title/Signature Page

The title/signature page is the first page of the document. It is the first page of the Roman-numbered front matter and is therefore considered page i, though the page number should not appear. The title page is always a right-hand page. Use 18-pt, bold Arial type for the document number, revision level, title, and issue date and to show the name of the Center. Do not place logos, drawings, or photographs on a title page.

The header of the title page is identical to the header of the cover page (see KSC-YA-6197).

KSC specifications bear only the approval signature of the director of the responsible organization. The signature elements are left-aligned and then centered between the left and right margins. Show the name and title in 10-pt Arial type. First and middle initials and last name are adequate for identification, but a fuller representation may be used.

8.1.3 Opening Elements

Forewords, acknowledgements, and executive summaries are not included in KSC specifications.

8.2 Headers and Footers

This section describes headers and footers for all pages other than the cover page (see 8.1.1), title page (see 8.1.2), and the Standardization Document Improvement Proposal (final page [see 8.6]).

The header begins 0.5 inch below the top edge and ends 1.3 inches below the top edge of the sheet. This allows comfortable space for (line 1) the document number and revision level and (line 2) the issue date of the current release. Two blank lines separate these elements from the text area. Headers for even-numbered pages are aligned at the left margin. Headers for odd-numbered pages are aligned at the right margin. Material in headers is shown in 12-pt Times New Roman type.

The last possible line of the text area rests 1.2 inches above the bottom edge of the sheet. The footer is separated from the text area by 0.375 inch and occupies the remaining printable length of the page. Page numbers are aligned at the outside margin in 12-pt Times New Roman type.

8.3 Section and Subsection Headings

KSC specifications have required sections and subsections that comply with KSC-STD-P-0001. For a new KSC specification, the sections and subsections included in the KSC Specification template are required. Revisions to existing KSC specifications may follow the sections and sub-sections in place at the initial release or the last revision.

8.4 Applicable Documents Section

KSC specifications require that Section 2 be titled APPLICABLE DOCUMENTS. Applicable documents are ones that are called out in the current document and whose authority is transferred to the current document to a specified degree. If no applicable documents are cited in the KSC specification, type "Not Applicable" as the only paragraph in the section.

If any applicable documents are cited in the KSC specification, the following paragraph is the first to appear in the section.

> The following documents form a part of this document to the extent specified herein. When this document is used for procurement, including solicitations, or is added to an existing contract, the specific revision levels, amendments, and approval dates of said documents shall be specified in an attachment to the Solicitation/Statement of Work/Contract.

Format the preceding paragraph as a regular body paragraph. The inset left and right margins shown in the preceding paragraph are to help emphasize this paragraph only in that location. This paragraph is available as AutoText in the KSC Specification template as App Doc Opening ¶.

Then establish subsections 2.1 and 2.2. Title these subsections "Governmental" and "Non-Governmental," respectively. If the documents cited are all from Governmental sources, type "Not Applicable" as the only paragraph in 2.2. Likewise, if the documents cited are all from Non-Governmental sources, type "Not Applicable" as the only paragraph in 2.1.

Within 2.1 and 2.2, list document sources alphanumerically, using title capitalization (see 4.10). Show the document source in 12 pt, underlined Times New Roman type aligned 0.5 inch from the left margin. Double-space and then list the applicable documents (document number and title) from that source in alphanumeric order by document number. Align the document number at 0.5 inch from the left margin. Document titles begin on the same lines as the document numbers, aligned 3 inches from the left margin. Runover title text is aligned with the beginning of the title. All lines of text related to a single document should be kept together and not break across a page. This formatting is achieved in the template by inserting and populating Doc List Format AutoText, a borderless table.

Include the following parenthetical paragraph after the last document in 2.1:

> (Copies of specifications, standards, drawings, and publications required by suppliers in connection with specified procurement functions should be obtained from the procuring activity or as directed by the Contracting Officer.)

Format the preceding paragraph as a regular body paragraph. The inset left and right margins shown in the preceding paragraph are to help emphasize this paragraph only in this location. This paragraph is available as AutoText in the KSC Specification template as Government Document Closing ¶.

In 2.2, after listing the applicable documents for each source, insert the following paragraph, providing the name and complete mailing address for each document source:

> (Applications for copies should be addressed to <*name and full mailing address of organization including zip code*>.)

Format the preceding paragraph as a regular body paragraph. The inset left and right margins shown in the preceding paragraph are to help emphasize this paragraph only in that location.

If reference documents (ones not called out in the current document but that provide additional, nonessential information) are listed, place them in an appendix.

8.5 Document Release and Distribution Procedures

The guidelines for initial release (7.1), revisions (7.2), and cancellations (7.3) apply to KSC specifications. Document release at all levels is accomplished through EDC.

8.6 Standardization Document Improvement Proposal

The final page of a KSC specification is the Standardization Document Improvement Proposal (KSC Form 610NS). Complete the following blocks on the form in 12-pt Arial type: 1 through 3 and 8.a through 8.c.

To accommodate KSC Form 610NS, use top/bottom margins of 0.4 inch and inside/outside margins of 0.38 inch. Set the headers and footers 0.0 inch from the edge of the paper. This is always an unnumbered right-hand page.

9. KSC STANDARD

KSC standards have Centerwide authority and are filed in the KSC Library after release. Except as defined in this section, the guidelines for writing (Section 4), general formatting (Section 5), document elements (Section 6), and document preparation (Section 7) apply to KSC standards. KSC Standards are formatted head to head.

9.1 Front Matter

9.1.1 Cover Page

Use KSC Form 16-12 for the cover. Use 18-pt, bold Arial type for the document number, revision level (which follows the document number on the same line), title, issue date, and responsible directorate as shown on the cover of the KSC Standard template (KSC-YA-6197). Use 12-pt Arial type to indicate a superseded KSC standard in the header.

Do not place additional logos on the cover page.

Inside and outside margins of 1.0 inch are suitable. A top margin of 1.3 inches allows the document number, revision level, issue date, and supersession statement to fit in the header. A bottom margin of 1.2 inches accommodates the footer material of KSC Form 16-12.

A measurement designation is required in the upper left corner of the cover page. The designations are shown in Figure 1 and are available in the KSC Standard template.

At the author's discretion, the filename (use of a filename field is recommended) may be included in the footer in 6-pt Times New Roman type. Such an identifier can be useful for document tracking purposes. If used, the initials of assigned custodians, editors, illustrators, or word processing operators may follow this field separated by slashes.

If the KSC standard contains technical information subject to ITAR (see Figure 3) or EAR (see Figure 4), the appropriate notice must appear on the cover page. Place the notice between the title and the name of the responsible directorate. Both notices are available in the KSC Standard template.

The cover page is a right-hand page, the back of which is always blank and unnumbered. The template provides for the blank back with an odd-page section break at the bottom of the cover page. The blank sheet is necessarily included when a single-sided original is printed.

9.1.2 Title/Signature Page

The title/signature page is the first page of the document. It is the first page of the Roman-numbered front matter and is therefore considered page i, though the page number should not appear. The title page is always a right-hand page. Use 18-pt, bold Arial type for the document number, revision level, title, and issue date and to show the name of the Center. Do not place logos, drawings, or photographs on a title page.

The header of the title page is identical to the header of the cover page (see KSC-YA-6197).

KSC Standards bear only the approval signature of the director of the responsible organization. The signature elements are left-aligned and then centered between the left and right margins. Show the name and title in 10-pt Arial type. First and middle initials and last name are adequate for identification, but a fuller representation may be used.

9.1.3 Opening Elements

Forewords, acknowledgements, and executive summaries are not included in KSC Standards.

9.2 Headers and Footers

This section describes headers and footers for all pages other than the cover page (see 9.1.1), title page (see 9.1.2), and the Standardization Document Improvement Proposal (final page [see 9.6]).

The header begins 0.5 inch below the top edge and ends 1.3 inches below the top edge of the sheet. This allows comfortable space for (line 1) the document number and revision level and (line 2) the issue date of the current release. Two blank lines separate these elements from the text area. Headers for even-numbered pages are aligned at the left margin. Headers for odd-numbered pages are aligned at the right margin. Material in headers is shown in 12-pt Times New Roman type.

The last possible line of the text area rests 1.2 inches above the bottom edge of the sheet. The footer is separated from the text area by 0.375 inch and occupies the remaining printable length of the page. Page numbers are aligned at the outside margin in 12-pt Times New Roman type.

9.3 Section and Subsection Headings

KSC standards have required sections and subsections. For a new KSC standard, the sections and subsections included in the KSC Standard template are required. Revisions to existing KSC standards may follow the sections and subsections in place at the initial release or the last revision.

9.4 Applicable Documents Section

KSC standards require that Section 2 be titled APPLICABLE DOCUMENTS. Applicable documents are ones that are called out in the current document and whose authority is transferred to the current document to a specified degree. If no applicable documents are cited in the KSC standard, type "Not Applicable" as the only paragraph in the section.

If any applicable documents are cited in the KSC standard, the following paragraph is the first to appear in the section.

> The following documents form a part of this document to the extent specified herein. When this document is used for procurement, including solicitations, or is added to an existing contract, the specific revision levels, amendments, and approval dates of said documents shall be specified in an attachment to the Solicitation/Statement of Work/Contract.

Format the preceding paragraph as a regular body paragraph. The inset left and right margins shown in the preceding paragraph are to help emphasize that paragraph only in this location. This paragraph is available as AutoText in the KSC Standard template as App Doc Opening ¶.

Then establish subsections 2.1 and 2.2. Title these subsections "Governmental" and "Non-Governmental," respectively. If the documents cited are all from Governmental sources, type "Not Applicable" as the only paragraph in 2.2. Likewise, if the documents cited are all from Non-Governmental sources, type "Not Applicable" as the only paragraph in 2.1.

Within 2.1 and 2.2, list document sources alphanumerically, using title capitalization (see 4.10). Show the document source in 12 pt, underlined Times New Roman type aligned 0.5 inch from the left margin. Double-space and then list the applicable documents (document number and title) from that source in alphanumeric order by document number. Align the document number at 0.5 inch from the left margin. Document titles begin on the same lines as the document numbers, aligned 3 inches from the left margin. Runover title text is aligned with the beginning of the title. All lines of text related to a single document should be kept together and not be allowed to break across a page. This formatting is achieved in the template by inserting and populating Doc List Format AutoText, a borderless table.

Include the following parenthetical paragraph after the last document in 2.1:

> (Copies of specifications, standards, drawings, and publications required by suppliers in connection with specified procurement functions should be obtained from the procuring activity or as directed by the Contracting Officer.)

Format the preceding paragraph as a regular body paragraph. The inset left and right margins shown in the preceding paragraph are to help emphasize this paragraph only in that location. This paragraph is available as AutoText in the KSC Standard template as Government Document Closing ¶.

In 2.2, after listing the applicable documents for each source, insert the following paragraph, providing the name and complete mailing address for each document source:

> (Applications for copies should be addressed to *<name and full mailing address of organization including zip code>*.)

Format the preceding paragraph as a regular body paragraph. The inset left and right margins shown in the preceding paragraph are to help emphasize this paragraph only in that location.

If reference documents (ones not called out in the current document but that provide additional, nonessential information) are listed, place them in an appendix.

9.5 Document Release and Distribution Procedures

The guidelines for initial release (7.1), revisions (7.2), and cancellations (7.3) apply to KSC standards. Document release at all levels is accomplished through EDC.

9.6 Standardization Document Improvement Proposal

The final page of a KSC standard is the Standardization Document Improvement Proposal (KSC Form 610NS). Complete the following blocks on the form in 12-pt Arial type: 1 through 3 and 8.a through 8.c.

To accommodate KSC Form 610NS, use top/bottom margins of 0.4 inch and inside/outside margins of 0.38 inch. Set the headers and footers 0.0 inch from the edge of the paper. This is always an unnumbered right-hand page.

10. KSC SPECIFICATION DRAWING

The KSC specification drawing format is intended for the following document types:

- Equipment Procurement/Performance Specification Drawing.
- Process Specification Drawing.
- Material Specification Drawing.

While the content of a KSC specification drawing is a document, the medium itself is a drawing. Instead of document numbers, drawing numbers in the ##K series are issued by EDC.

Except as defined in this section, the guidelines for writing (Section 4), general formatting (Section 5), document elements (Section 6), and document preparation (Section 7) apply to KSC specification drawings.

10.1 General Formatting

KSC specification drawings are formatted face-only and printed on KSC Form 21-2C (for the cover) and KSC Form 21-2D for all other sheets). These forms are commonly referred to as spec drawing paper. To accommodate the layouts of these forms, set the left and right margins approximately .75 inch from the edges of the paper. Set the top and bottom margins 1.25 to 1.50 inches from the edges of the paper. For documents prepared using the KSC Specification Drawing template, the layouts of all styles and AutoText entries have been modified to accommodate spec drawing paper.

10.1.1 Section and Subsection Headings

KSC specification drawings have required sections and subsections that comply with KSC-STD-P-0001. For a new KSC specification drawing, the sections and subsections included in the KSC Specification Drawing template are required. Revisions to existing KSC specification drawings may follow the sections and subsections in place at the initial release or the last revision.

10.1.2 Page Numbering

The pages of a KSC specification drawing are A-size drawing sheets overlaid with a bordered drawing format. At the bottom right of the cover and each continuation sheet, indicate the sheet number and the total number of sheets.

10.1.3 Page Assignments and Blank Left-Hand Pages

All sheets of a KSC specification drawing are formatted face-only. No sheets bear the text *This page intentionally left blank.* Each of the following document elements begins on a new sheet:

a. Table of contents.

b. List of abbreviations, acronyms, and symbols.

c. Body of document.

d. Appendices.

10.1.4 Tabloid Pages

All sheets of a KSC specification drawing are A-size drawing sheets. Oversized sheets are not appropriate.

10.2 Document Elements

10.2.1 Multivolume Manuals or Documents

KSC specification drawings are not appropriate for material that requires multiple volumes or documents.

10.2.2 Cover Sheet

Complete all applicable blocks on the form (starting from the top left), to include the following, at a minimum:

a. Rev (uppercase letter if other than the initial release).

b. Description. (Account for all sheets. Sheet 1 is always revised. All other sheets are revised and redrawn. Indicate any sheets that are added.)

c. Date (effective date of revision).

d. Approval. (The approving authority initials or signs this block for revisions. Type the initials or name of the approving authority for previous revisions.)

e. Filename.

f. Original Date of Drawing.

g. Engineer. (This is the larger block titled Engineer. Name is preferred over initials.)

h. Submitted. (Name is preferred over initials.).

i. Approved. (Name is preferred over initials.).

j. Title. (This is the block below JOHN F. KENNEDY SPACE CENTER, NASA, KENNEDY SPACE CENTER, FLORIDA.)

k. Dwg. No.

l. Rev.

m. Sheet _ of _.

In the lower half of the cover, show the ITAR or EAR notice if applicable (see 6.2.1). Also include the appropriate measurement designation (see 6.13).

10.2.3 Continuation Sheets

At initial release, the Revision History block is left blank. At each revision, complete the following blocks of the Revision History at a minimum:

- Rev. (Use sequential uppercase letters.)
- Description. (This applies to each sheet. For all previously existing sheets, type *Revised and redrawn.* For new sheets, type *Added.*)
- Date. (This is the effective date of revision.)
- Approval. (This is the signature or original initials of authority approving the revision.)

In the lower block on the continuation sheet, at a minimum, complete the Dwg. No. and Sheet _ of _ for initial release. For revisions, also complete the Rev block.

10.2.4 Opening Elements

Forewords, acknowledgements, executive summaries, and records of revisions are not included in KSC specification drawings.

10.2.5 Headers and Footers

The form sections of the cover and continuation sheets are considered the headers and footer of those sheets. All other information added to these sheets appears inside the border.

10.3 Drawing Release and Distribution Procedures

10.3.1 Initial Release

For initial release of a KSC specification drawing, the approving authority shall sign, initial, or affix an approval indicator in the Approved block at the bottom of the cover sheet. Release KSC specification drawings through EDC according to KDP-KSC-P-1537.

10.3.2 Revisions

Refer to GP-435 for specific guidelines on revisions to drawings. Release revisions to KSC specification drawings through EDC according to KDP-KSC-P-1537.

10.3.3 Cancellation

Refer to GP-435 for specific guidelines on canceling drawings. Cancel KSC specification drawings through EDC according to KDP-KSC-P-1537.

11. NPR 7120.5-COMPLIANT PROJECT PLAN

Except as defined in this section, the guidelines for writing (Section 4), general formatting (Section 5), document elements (Section 6), and document preparation (Section 7) apply to NPR 7120.5-compliant project plans.

11.1 Section and Subsection Headings

The sections and subsections included in the NPR 7120.5-Compliant Project Plan template are required.

11.2 Opening Elements

Forewords, acknowledgements, and executive summaries are not included in NPR 7120.5-compliant project plans.

12. CONFIGURATION MANAGEMENT PLAN

12.1 Section and Subsection Headings

The sections and subsections included in the Configuration Management Plan template are required.

12.2 Opening Elements

Forewords, acknowledgements, and executive summaries are not included in configuration management plans.

13. SOFTWARE VERSION DESCRIPTION DOCUMENT (SVDD)

While the content of an SVDD is a document, the medium itself is a drawing. Instead of document numbers, drawing numbers in one of the ##K series are issued by EDC.

Except as defined in this section, the guidelines for writing (Section 4), general formatting (Section 5), document elements (Section 6), and document preparation (Section 7) apply to SVDDs.

13.1 General Formatting

SVDDs are formatted face-only and printed on KSC Form 21-2C (for the cover) and KSC Form 21-2D for all other sheets). These forms are commonly referred to as spec drawing paper. To accommodate the layouts of these forms, set the lift and right margins approximately .75 inch from the edges of the paper. Set the top and bottom margins 1.25 to 1.50 inches from the edges of the paper. For documents prepared using the SVDD template, the layouts of all styles and AutoText entries have been modified to accommodate spec drawing paper.

13.1.1 Section and Subsection Headings

SVDDs have required sections and subsections. For a new SVDD, the sections and subsections included in the SVDD template are required. Revisions to existing SVDDs may follow the sections and subsections in place at the initial release or the last revision.

13.1.2 Page Numbering

The pages of an SVDD are A-size drawing sheets overlaid with a bordered drawing format. At the bottom right of the cover and each continuation sheet, indicate the sheet number and the total number of sheets.

13.1.3 Page Assignments and Blank Left-Hand Pages

All sheets of an SVDD are printed face-only. No sheets bear the text *This page intentionally left blank.* Each of the following document elements begins on a new sheet:

a. Table of contents.

b. List of abbreviations, acronyms, and symbols.

c. Body of document.

d. Appendices.

13.1.4 Tabloid Pages

All sheets of an SVDD are A-size drawing sheets. Oversized sheets are not appropriate.

13.2 Document Elements

13.2.1 Multivolume Manuals or Documents

SVDDs are not appropriate for material that requires multiple volumes or documents.

13.2.2 Cover Sheet

Complete all applicable blocks on the form (starting from the top left), to include the following, at a minimum:

a. Rev (uppercase letter if other than the initial release).

b. Description. (Account for all sheets. Sheet 1 is always revised. All other sheets are revised and redrawn. Indicate any sheets that are added.)

c. Date (effective date of revision).

d. Approval. (The approving authority initials or signs this block for revisions. Type the initials or name of the approving authority for previous revisions.)

e. Filename.

f. Original Date of Drawing.

g. Engineer. (This is the larger block titled Engineer. Name is preferred over initials.)

h. Submitted. (Name is preferred over initials.)

i. Approved. (Name is preferred over initials.)

j. Title. (This is the block below JOHN F. KENNEDY SPACE CENTER, NASA, KENNEDY SPACE CENTER, FLORIDA.

k. Dwg. No.

l. Rev.

m. Sheet _ of _.

In the lower half of the cover, show the ITAR or EAR notice if applicable (see 6.2.1). Also include the appropriate measurement designation (see 6.13).

13.2.3 Continuation Sheets

At initial release, the Revision History block is left blank. At each revision, complete the following blocks of the Revision History at a minimum:

- Rev. (Use sequential uppercase letters.)
- Description. (This applies to each sheet. For all previously existing sheets, type *Revised and redrawn.* For new sheets, type *Added.*)
- Date. (This is the effective date of revision.)
- Approval. (This is the signature or original initials of authority approving the revision.)

In the lower block on the continuation sheet, at a minimum, complete the Dwg. No. and Sheet _ of _ for initial release. For revisions, also complete the Rev block.

13.2.4 Opening Elements

Forewords, acknowledgements, executive summaries, and records of revisions/changes are not included in SVDDs.

13.2.5 Headers and Footers

The form sections of the cover and continuation sheets are considered the headers and footer of those sheets. All other information added to these sheets appears inside the border.

13.3 Drawing Release and Distribution Procedures

13.3.1 Initial Release

For initial release of an SVDD, the approving authority shall sign, initial, or affix an approval indicator in the Approved block at the bottom of the cover sheet. Release SVDDs through EDC according to KDP-KSC-P-1537.

13.3.2 Revisions

Refer to GP-435 for specific guidelines on revisions to drawings. Release revisions to SVDDs through EDC according to KDP-KSC-P-1537.

13.3.3 Cancellation

Refer to GP-435 for specific guidelines on canceling drawings. Cancel SVDDs through EDC according to KDP-KSC-P-1537.

APPENDIX A. GLOSSARY

applicable documents: documents that are called out in the current document and whose authority is transferred to the current document to a specified degree.

AutoText: an MS Word function that stores an object (e.g., a string of formatted text, a table, a graphic) and inserts it into the document. The capability is especially useful for accurately repeating material in a document.

cancellation: the release of the document's title page to announce cancellation when a document is no longer applicable. A cancellation may or may not include supersession (see 7.3).

caution: an operating procedure or practice that, if not strictly observed, will result in damage to or destruction of equipment (see 6.10).

cross-reference: an automatically updatable reference to a figure, table, paragraph heading, appendix, ordered list item, or equation in the current document. Cross-references are achieved in MS Word by using the Insert | Reference | Cross-reference function in conjunction with styles and automatic captions. Cross-references may or may not be hyperlinked. See 5.6 and KSC-YA-6197.

face-only: formatting that accommodates printing on only one side of the sheet, with no distinction of left- and right-hand pages.

head to head: formatting that accommodates printing on both sides of the sheet, with left-hand pages being even-numbered, right-hand pages being odd-numbered, and headers and page numbers being aligned at the outer margins.

italic: the slanted appearance of type in any font; commonly used to identify words used as words and to display titles of books.

note: an operating procedure or condition that should be highlighted (see 6.10).

reference: indication of another document or another location or element in the current document. A reference, in and of itself, does not imply any word processing functionality. Also see cross-reference.

reference documents: documents not called out in the current document but that provide additional, nonessential information.

release: issuance of a document for general availability through the Engineering Document Center (EDC) or the TechDoc system (see 7.1).

revision: the release of an update to an entire document (see 7.2).

roman: the normal, upright appearance of type, as opposed to italic type that slants to the right.

style: a set of predetermined formatting attributes that can be applied to a paragraph to control font characteristics (font, size, appearance [e.g., bold, all caps]), text alignment, location of tabs, spacing between lines and paragraphs, and numbering.

template: an MS Word file (file extension .dot) containing a collection of styles and other automated capabilities, such as AutoText, that control the formatting of a document (see Section 3).

warning: an operating procedure or practice that, if not strictly observed, may result in personal injury or loss of life (see 6.10).